

# **GREAT SMOKY MOUNTAINS NATIONAL PARK**

## **FY2006 Annual Summary Report Prepared by**

### **NATURAL RESOURCES CONSERVATION SERVICE NATIONAL PLANT MATERIALS CENTER BELTSVILLE, MARYLAND**

#### **INTRODUCTION**

The current cooperative agreement between Great Smoky Mountains National Park (GRSM) and the National Plant Materials Center (NPMC) was signed in September 2006, for the fiscal years 2006-2010. The Great Smoky Mountains National Park and Foothills Parkway, has a need to preserve the native plant resources and revegetate parklands. The NPS requires that restoration of native plants will be accomplished using germplasm from populations as closely related genetically and ecologically as possible to park populations. The Great Smoky Mountains National Park has harvested seed from indigenous populations, but does not have the personnel, expertise, facilities or equipment needed to clean process, test and store the seed. The NRCS, National Plant Materials Center (NPMC) does have the personnel and is equipped to clean, process and store quantities of seed sufficient to meet the NPS needs within the required time frame. Technical expertise as necessary to achieve this goal will be provided by the NPMC under this agreement.

#### **ACCOMPLISHMENTS**

515 lbs. (bulk) of grass and forb seed was harvested by GRSM staff, and then shipped to the NPMC in October 2005. The following table lists the 12 different lots (9 different species) of seed which was harvested from the GRSM's Cades Cove increase fields, as well from the NPMC production fields. The 515 lbs of bulk seed was cleaned (de-bearded and then run through a clipper) by NPMC staff to yield 253 lbs of cleaned seed. Also included in the table are the species, amounts of seed harvested, and the resulting cleaned seed weights. Nine of the twelve lots had enough seed to be tested for viability, purity and for noxious weed seed content. For the 2005 harvest it was decided to change seed testing labs and have the Kansas Crop Improvement Association test the seed. The previous year the New York Agricultural Experiment Station (due to funding and staffing changes) needed an excessive amount of time to complete the required testing.

## Seed Produced in the GRSM Cades Cove Increase and NPMC Production Fields 2006

Name	Common Name	Lot #	Bulk Weight (lbs.)	Cleaned Weight (lbs.)	Purity (%)	Viability (%)
1. <i>Andropogon gerardii</i>	Big bluestem	SWC-05-GRSMINCRS	149.8	41.5	46.6	63
2. <i>Andropogon glomeratus</i>	Bushy bluestem	SWC-05-GRSMINCRS	40.8	6.3	93	80
3. <i>Helianthus angustifolius</i>	Swamp Sunflower	SWC-05-GRSMINCRS	8.1	.5		
4. <i>Lespedeza capitata</i>	Roundheaded Lespedeza	SWC-05-GRSMINCRS	3.4	.078		
5. <i>Panicum anceps</i>	Panic grass	SWC-05-GRSMINCRS	63.9	46.5	96	65
6. <i>Pityopsis graminifolia</i>	Narrowleaf Silkgrass	SWC-05-GRSMFHP	1.4	.1		
7. <i>Pityopsis graminifolia</i>	Narrowleaf Silkgrass	SCO-05-GRSMD1	11.3	2.5	99	8
8. <i>Saccharum giganteum</i>	Sugarcane plumegrass	SWC-05-GRSMINCRS	24	4	98	67
9. <i>Sorghastrum nutans</i>	Indiangrass	SWC-05-GRSMINCRS	150.2	62	93	74
10. <i>Sorghastrum nutans</i>	Indiangrass	SCO-05-GRSMLCST	133.7	65	71	64
11. <i>Veronia noveboracensis</i>	New York Ironweed	SWC-05-GRSMCADE	4.8	2.6	72	80
12. <i>Schizachyrum scoparium</i>	Little bluestem	SWC-05-GRSMINCRS	53.5	20.9	39	57
Total			514.9	253	79	62

**TECHNOLOGY DEVELOPMENT** –Seed of *Pityopsis graminifolia* (narrowleaf silkgrass) has been a problematic species in having low viability. Seed produced in 2005 and 2006 was tested and found to have viabilities of only 6% and 8%. The NPMC’s de-bearder machine was fitted with thermometers before cleaning the 2006 seed lots to monitor that heat which is generated did not approach or exceed 105°F, which has been shown to be a threshold for damaging seed. While the temperature in the de-bearder did not approach or exceed that temperature, it’s a high possibility that the de-bearder is creating friction which is physically damaging the narrowleaf silkgrass seed. The Kansas Crop Improvement Association seed testing lab observed in checking viability that many seedlings emerged without having roots. A brush cleaning type seed cleaner should be a way to clean the seed more gently without damage. This hypothesis is currently being tested at the NPMC.